Notice of Allowability	Application No. 09/837,995	Applicant(s) MUKHERJEE ET AL.	
	Examiner Anne L Damiano	Art Unit 2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *amendment filed 5/10/04*.

2. ☒ The allowed claim(s) is/are *1-18*.

3. ☒ The drawings filed on *10 May 2004* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mark E. Scott (Reg. # 43,100) on 9/30/04.

The application has been amended as follows:

Claim 5 (line 3) insert --only-- following "as between the at least two threads."

Claim 11 (line 4) replace "our" with --out-- following "thread to execute program steps."

Claim 13 (line 17) insert --only-- following "between the leading and trailing threads."

Allowable Subject Matter

2. Claims 1-18 are allowed.

The following is an examiner's statement of reasons for allowance:

The primary reason for allowance of claims 1-4 is the inclusion a store queue that stores memory requests that directly or indirectly change values in the system memory, a compare logic that scans the contents of the store queue for corresponding memory request matches, and based

on whether the corresponding memory requests match, performs one of allowing the memory request to execute or initiating fault recovery, in a computer system comprising a pipelined, simultaneous and redundantly threaded processor having at least two threads as recited in the claims.

The primary reason for allowance of claims 5-7 is the inclusion of verifying, as between at least two threads, only committed store requests and data load requests from sources that are not cached in a method of checking for transient faults in a pipelined, simultaneous and redundantly threaded processor having at least two threads as recited in the claims.

The primary reason for allowance of claims 8-11 and claims 14-17 is the inclusion of executing programs as first and second threads, generating first and second committed store requests; checking an address and data associated with the first committed store request against an address and data associated with the second committed store request in a compare logic; and allowing one of the first and second commands to execute if the checking step shows those commands are the same in a method of detecting transient faults in a simultaneous and redundantly threaded microprocessor having at least two threads, as recited in the claims.

The primary reason for allowance of claims 12 and 18 is the inclusion of first and second pipelines executing first and second program threads that independently generate corresponding committed write requests, a store queue coupled to the first and second pipelines, a compare circuit coupled to the store queue, wherein each thread places the committed write requests in the

store queue; and wherein the compare circuit detects transient faults in operation of the first and second pipeline by comparing the committed store requests from each thread, in a simultaneous and redundantly threaded microprocessor as recited in the claims.

The primary reason for allowance of claim 13 is the inclusion of the processor that processes instructions in leading and trailing threads and wherein the processor detects transient faults by verifying as between the leading and trailing threads only the committed stored and uncached memory read requests, in a pipelined, simultaneous and redundantly threaded processor as recited in the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne L Damiano whose telephone number is (703) 305-8010. After approximately October 13th, the examiner can be reached at (571) 272-3658. The examiner can normally be reached on M-F 9-6:30 first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (703) 305-9713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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ROBERT BEAUSOLIEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100